

Borehole

51-01-04

Log Event A

Borehole Information

Farm : <u>TX</u>	Tank : <u>TX-101</u>	Site Number : <u>299-W15-167</u>
N-Coord : <u>41,630</u>	W-Coord : <u>75,708</u>	TOC Elevation : <u>672.32</u>
Water Level, ft :	Date Drilled : <u>12/21/1973</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>115</u>	

Cement Bottom, ft. : <u>49</u>	Cement Top, ft. : <u>47</u>
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Borehole Notes:

According to the driller's records, this borehole was not perforated or grouted. Cement was encountered from 47 to 49 ft during drilling and may be debris within the tank excavation or the footing of the tank base. The casing thickness is presumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing.

Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>10/1995</u>	Calibration Reference : <u>GJPO-HAN-3</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>12/21/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>107.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>30.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>12/22/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>31.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>3</u>	Log Run Date : <u>12/22/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>66.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>50.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Spectral Gamma-Ray Borehole
Log Data Report

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Analysis Information

Analyst : P.D. Henwood

Data Processing Reference : P-GJPO-1787

Analysis Date : 8/12/1996

Analysis Notes :

This borehole was logged by the SGLS in three logging runs; log run 3 repeated the log of a segment of the borehole for the specific purpose of demonstrating the repeatability of the logging system. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and system efficiency, confirming the SGLS system was operating within specifications. The energy calibration and peak-shape calibration from these verification spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

The SGLS data was processed using a casing-correction factor for 0.280-in.-thick steel casing.

Depth overlaps, where data were collected by separate logging runs over the same depth interval, occurred in this borehole between depths of 30.5 and 31.5 ft. In addition, log run 3 repeated the interval between depths of 50 and 66 ft as a check of the quality of the SGLS radionuclide concentrations determinations.

The concentrations of Cs-137 and the natural radionuclides (K-40, U-238, and Th-232) were calculated using both the original and repeated log data sets at the overlapping points. The calculated concentrations of Cs-137, K-40, U-238, and Th-232 using the separate data sets were within the statistical uncertainty of the measurements, indicating very good repeatability of the radionuclide concentration measurements.

Cs-137 was the only man-made radionuclide identified in this borehole. The presence of Cs-137 was measured almost continuously throughout the borehole. Concentrations measured between 1 and 6 pCi/g from the ground surface to about 21 ft and less than 1 pCi/g in the remainder of the borehole; the concentration at the bottom of the borehole measured about 1 pCi/g.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank TX-101.

Log Plot Notes:

Separate log plots show the man-made (e.g., Cs-137) and the naturally occurring radionuclides (e.g., K-40, U-238, and Th-232). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A separate plot is included that compares the measured concentrations of Cs-137 and the naturally occurring



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radionuclides (K-40, U-238, and Th-232) over the rerun or repeated log interval. The radionuclide concentrations shown were calculated using the separate data sets provided by the original and repeated logging runs.